**An Analysis of Using a Thermos Food Flask to Keep Food/Liquid Substances Warm**

**INTRODUCTION**

A thermos food flask is intended for children and adults. The flasks unique design was made for the purpose of keeping food fresh and healthier at the right temperature for extended periods of time. It preserves the temperature of hot or cold substances.

According to the American Heritage Dictionary, a vacuum flask is an insulated container, consisting of two flasks; one inside the other separated by a vacuum. The vacuum flask was invented by Scottish physicist and chemist, Sir James Dewar in 1892. The first commercial use vacuum flask was made in 1904. The vacuum was later renamed to its common name “thermos”, which came from the Greek word “therme” meaning hot. The vacuum greatly reduces the transfer of heat, preventing a temperature change. The walls are usually made of glass because it is a poor conductor of heat; its surfaces are usually lined with a reflective silver metal to reduce the transfer of heat via radiation.

The thermos flask is used by most persons. It is used in homes and outdoor (for picnics and portable lunch carriers).The food flask should be cleaned with plastic abrasive pads to prevent scratches and should not be cleaned with cleaners containing chlorine because it may affect the flavour of foods or drinks. When adding boiling water to the container, spilling should be avoided to prevent the user from being burnt. The resources needed for this process are:

* Hot Water
* Food/Liquid substance
* The thermos container
* A pot
* A funnel (optional).

This process consists of four (4) main stages *(shown in Figure 1)*:

Stage 1: Preparing the thermos flask for use

Stage 2: Heating thermos using hot water

Stage 3: Prepare food/liquid substance

Stage 4: Add food/liquid substance and close container

*Figure1: shows the linear relationship between the four main stages*

**BODY**

**Stage 1: Preparing the Thermos Flask for Use**

Preparing the thermos for use is the primary stage in this process. It involves the detachment of all the main parts of the flask to promote effectiveness. The thermos should be clean and the lid, cap and base should be removed *(shown in Figure 2)*.

*Figure 2: showing the linear relationship in the detachment process*

**Stage 2: Heating the Thermos Using Hot Water**

This stage consists of three (3) steps and should be followed correctly to guarantee effectiveness. The purpose of the stage is to ensure that when the food substance is placed in the container of the thermos flask, it remains its correct temperature until it is ready for use. The steps in this stage are as follows *(shown in Figure 3)*:

* Step 1: Boil a pot of water
* Step 2: Run hot water on the exterior of the thermos
* Step 3: Add the boiling water to the container and seal

*Figure 3: showing the relationship between the three (3) steps*

*Step 1:*

*Boil a pot of water*

Firstly, in this step, 2 ½ litres of water is placed in a pot and left to boil *(Shown in Figure 4)*.



*Figure 4: showing water being boiled (Photo courtesy of: oliveviews.com)*

*Step 2:*

*Run hot water on the exterior of the thermos*

Secondly, the silver part of the thermos should be placed under the pipe to allow hot water to run over it for two (2) minutes. The purpose of this step is to let the hot water heat up the outside of the thermos.

*Step 3:*

*Add the boiling water to the container and seal*

Thirdly, the thermos container should be carefully filled with the boiling water from step 1 *(shown in Figure 5)*. Special considerations should be taken to avoid spilling and burning of the user. A funnel may be used in this step. After the water is poured into the container, the cap should be replaced onto the flask and left for five (5) minutes. The purpose of this is to let the boiling water heat up the metal inside of the thermos.



*Figure 5: showing water being poured into a thermos flask (Photo courtesy of: oliveviews.com)*

**Stage 3: Prepare Food or Liquid Substance**

In this step the food or liquid substance should be heated. This enables the substance to be inserted into the container at it correct temperature.

**Stage 4: Add Food/Liquid Substance and Close Container**

Finally, the cap should be removed from the thermos and the boiling water must be poured out.The food/liquid substance must be carefully poured into the thermos *(shown in Figure 6)*. The lid, cap and base should be replaced and tightened. At this stage, the process is completed and the substance will be kept warm until it is ready for use.



*Figure 6: showing liquid substance being poured into the thermos flask (Photo courtesy of: blogspot.com)*

**CONCLUSION**

Using a thermos food flask to keep food/liquid substances warm is a linear process. Each stage must be followed carefully to attain success. The overall time for this process is half an hour and can be very cost effective.

An advantage of using a thermos flask for keeping substances warm is that it is portable so food is kept at it right temperature at any location. On the other hand, its disadvantage is that it only allows food to be kept warm for up to7 hours. The effectiveness of this process is significantly based on how well the stages are carried out. A thermos flask is not only beneficial to home users, but also for lab technicians. The thermos may be used for storing gaseous liquids such as oxygen and nitrogen at below ambient temperature.